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Controlled Pasture Burning in the Folklife of the Kansas Flint Hills

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The Flint Hills of Kansas, forming a band approximately fifty miles wide, start north of Manhattan near the Nebraska border and run south nearly two hundred miles, at which point they merge into the Osage Hills of Oklahoma. This area, together with the row of counties bordering the Flint Hills to the east, is sometimes labeled the Bluestem Grazing Region; its four million acres of native grass represent the remaining one percent of a tallgrass prairie that once stretched north to Canada and east to Indiana and Ohio.[1] Cattle raising in the Flint Hills portion of this region differs in several respects from ranching in most other major grazing regions of the American West. Prominent among these differentiating traits (which include transient grazing and an occupational mix of farmer-stockman and pastureman alongside the more traditional rancher and cowboy) is the custom of pasture burning.[2]

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The benefits of intentional, or prescribed, pasture burning are many. Foremost environmentally is the fact that without fire the tallgrass prairie would soon revert to woodland, as is made evident by the rapid growth of trees (especially red cedar and osage orange) in pastures that are not burned.[3] Such pastures, in fact, are often overgrazed, which reflects another advantage of burning: A pasture cannot be fired unless enough of the previous year's growth is left standing to ensure a good blaze. Thus range managers who burn must of necessity refrain from overgrazing. (The standard among Flint Hills graziers is to graze half and burn half.) Burning also helps to retard the growth of undesirable weeds and brush while simultaneously facilitating the growth of the dominant native grasses in the Flint Hills—big and little bluestem, switch and Indian grasses, and side-oats grama. The same effect could be achieved by mowing weeds, sawing down trees, or spraying with chemical herbicides, but only at prohibitively high expenditures of both money and labor—and that only on the small percentage of pastureland in the Flint Hills that is rock-free and level enough to be traversed by tractor.

Burning, along with placement of salt and water, provides an effective method of controlling grazing patterns. If uninfluenced, cattle will often, over a period of years, overgraze one section of pasture (thus enabling undesirable vegetation to crowd out native grasses) while underutilizing other areas, with a resultant buildup of thatch. Spring burning of such areas evens out the usage of a pasture by encouraging cattle to graze the new growth in the burned area. Some ranchers will even burn on two or three different dates, usually about a week or ten days apart, in the same pasture if it is a large one, so that the incoming cattle will graze first one area then move to another as the tender young grass emerges in the more recently burned areas.[4] When this is done, the south end of a pasture is usually burned first and the north part last because cattle face into the predominant wind and tend to favor the south end of a pasture. Burning in this fashion encourages them to use the north end more heavily.[5] Finally, cattle grazed on burned pasture usually gain more weight than do cattle grazed on unburned pasture, a tendency that happily combines both fiscal and ecological soundness. In this instance, what is best for the land also is the most profitable for the producer.

Intentional agricultural burning is an age-old practice that is still widespread. Slash-and-burn, for example, continues to be a major method of ground-clearing in the Third World despite efforts to preserve the rain forests. In this country intentional range burning (the result of both Native American and British influences) was being carried out in colonial Georgia and the Carolinas at least half a century before the Revolutionary War.[6] The custom had spread to the trans-Mississippi West by the early 1800s, but by the end of that century it was encountering stiff popular opposition, particularly in prairie regions such as the Flint Hills. There grass fires, unchecked by roads or tilled fields, could turn wild and wreak widespread and often fatal destruction. The opposition to deliberate burning in the Great Plains began, in fact, nearly as soon as whites began to explore the region, and it continued full force during the settlement period.[7] Consider, for example, this harsh diatribe in 1875 from the editor of the El Dorado, Kansas, *Walnut Valley Times*:

> Stop the prairie fires! In the name of all that is good, stop the prairie fires at once! Stop the prairie fires, and you stop drought, hot winds and parched crops. Stop the prairie fires and you will save the country from another visitation of grasshoppers. Stop the prairie fires and you produce regular rainfalls. Stop the prairie fires and you fill up our springs, cause the streams to flow, fill the earth with moisture, cause thousands of young trees to spring up over the earth and enrich your lands a hundred fold. Stop the prairie fires and Kansas is a Garden of Eden. Continue them and it will ever continue to be an American desert. For Heaven's sake, stop the prairie fires![8]

The editor was right about one thing: Stop the prairie fires and trees will soon replace the prairie.

Range scientists added their support to the anti-burning movement so that by the mid-twentieth century, wide-scale, regular burning of pastureland was being carried out only in the Flint Hills. Here it continued uninterrupted as a traditional range-management practice though concentrated primarily in the center of the Hills (Chase, Greenwood, Morris, and Wabaunsee counties). It was unsanctioned, when not openly opposed, by local county agricultural extension agents. Darold Marlow, for example, one-time county agent for Wabaunsee County, eventually gave up his efforts to discourage the local ranchers and farmers from burning, especially after he had observed that those who were burning seemed to have better grass than those who weren't. A. E. "Pete" Maley, recently retired after nearly forty years of service in Morris and Lyon counties, was more forceful in his opposition. He commented, "Back in the fifties if you had put a match to a pasture, I'd have strung you up from the nearest utility pole."[9]

As is common with many who have experienced conversion, Maley is even more forceful today in his advocacy of burning, following the lead of range-management scientists who are now actively promoting prescribed burning not only in the tallgrass prairies but in the shortgrass regions as well.[10] Although controlled experiments in burning have been conducted for well over half a century, it is only in the past fifteen years that intentional burning has regained acceptance in the scientific community, with acceptance among the general populace following more slowly, according to Paul Ohlenbusch, Kansas State University range management specialist and self-proclaimed "pyro-manager."[11]

Pasture burning provides an excellent example of the reconciliation of folk practice with scientific learning. In fact, of all the points of contention that once existed between graziers and the scientific community on this issue, the only significant remaining question concerns the best time of year for burning. Agricultural scientists generally recommend mid-April to early May whereas many ranchers continue to burn in mid-March to early April. Many variables come into play on this issue: local weather conditions, availability of labor, rainfall and subsoil moisture (or their lack), the amount of dead grass remaining from the previous grazing season, growth stage of new vegetation, the date contracted for the release of cattle in a particular pasture, and general climatic conditions such as an early or late spring. Ranchers in the southern Flint Hills generally burn earlier than their counterparts 150 miles farther north simply because the new grass usually arrives earlier in the south.

Because of these variables, graziers and scientists will probably not soon agree on an ideal burning date. Rather than concentrate on this controversy, however, I want to focus on the folkways that preserved the practice of burning in the Flint Hills, despite stern opposition, until scientific knowledge could catch up with customs and traditions that ultimately can be traced to aboriginal usage.

Stephen Pyne notes that the eastern part of Kansas, along with much of the rest of the Great Plains, was regularly burned by Indians.[12] Many Flint Hills ranchers believe that their own firing of the prairies is simply a continuation of Native American practice, a belief most entertainingly expressed by the late Jerry Moxley, well-known Hereford breeder from Council Grove who ranched near the site of the last Kaw reservation in Kansas:

> The reason the Flint Hills are such a great grazing area was because of the treatment the Indians gave this land. They burned the grass each spring. They would burn it this way: The squaws would weave a large ball of this long-stemmed bluestem grass and then the men would take their braided rawhide lariat rope and would throw it around those bales or balls of grass. They would put their lariats on each ball of grass, and they would set it afire. Then they would ride just as far as they could go with that ball of fire and set the grass afire. The reason they burned it was to bring the buffalo in; they liked fresh green grass so this area was noted as a grazing area for buffalo.[13]

Just when white settlers adopted the custom of pasture burning is not certain, but it seems to have been within a very few years of the initial settlement of the Flint Hills. Kansas Territory was opened in 1854, and only two years later cattle were being grazed in what is now southern Chase and northern Butler counties.[14] Within another half-dozen years deliberate springtime burning of pastureland was occurring in Chase County, according to the diary of Elisha Randall Mardin. Mardin, a cattle trader who ranged as far as Indian Territory to acquire livestock, included the following entries for spring 1862:

13 March: The bottom of the place burned off at night.
14 April: We burned some in the pasture.
15 April: We burned the hill over. Had good luck.

16 April: We burned off the prairie in the bend. In the afternoon bought six steers of Shafer.
22 April: I helped herd at night. We burned some prairie on the bottom.
23 April: I herded in the forenoon. In the afternoon we burned off the weeds.[15]

The word choice for the entry for 13 March suggests that the fire may have been accidental whereas the April burnings were obviously intentional, supporting the contention that the custom of March burning derived from pressure from Texas cattlemen who wanted a good growth of new bluestem at the beginning of pasture season in mid-April. The practice of burning in March rather than April, then, seems to have developed sometime after the 1860s. Mardin's burning habits may have been influenced by the Kansa Indians. He had a good relationship with them, trading horses and other goods, and was often visited by individual Kansas in later years after he had moved to Eureka and the tribe had been removed to Oklahoma.

The custom of burning was well enough established and its efficacy well enough known that, when large numbers of Texas cattle began to be shipped into the Flint Hills for summer grazing around the turn of the century, burned pastures were often specified in the grazing contracts.[16] In addition to keeping up the fences, providing salt and water, and guaranteeing the count (i.e., accounting for each head of stock they had received in the spring), pasturemen had to burn the pastures in March so that there would be a lush growth of new grass by the mid-April opening of pasture season.

Burning pasture was relatively easy from this early period up until nearly midcentury, when opposition to burning had stiffened. Since everyone burned, all that was required was a good wind in the right direction and a box of matches. The late Henry Rogler (b. 1877) recalled, "As long as I can remember back, it was routine every spring, the pastures were all burned off; I can't remember any pastures that weren't burned in the early days at all for a good many years." Rogler's memory extended with clarity back to 1887.[17] Dudley "Slim" Pinkston of Bazaar, one of four brothers who began their careers in the 1920s as pasturemen by working on the Norton Ranch (which happened to be run by four brothers), told me in an interview, "The Nortons was strong burners. But them days everybody burnt. They'd just get on their horses about a certain time of the year and start lightin' matches."

FIG. 1. *Starting a burn with a firestick, Chase County, Kansas, March 1988.* Photo courtesy of James Hoy.

Today most fires are set from the back of a pickup or even a four-wheeler, but the spring of 1987 was so wet (and the chances of losing a stuck pickup so high) that the Pinkstons burned many of their pastures in much the same way the Norton brothers would have a hundred years earlier. A couple of riders would strike matches as they rode along and drop them into the tall, dead grass, using a technique they had learned from their former employers. Slim Pinkston explained:

> You want to break your matches in two before you throw them down. If you don't, some of them will light, but some of them will just lay there on the top of the grass and go out. The other day I was riding along and I got

so tired of breaking matches that I would just throw one out whole every once in a while, but most of the time it just laid up on top of the grass and didn't catch. But if you break them in two before you throw them down, they'll go down into the grass and catch. A lot of fellows don't know that, but the Norton boys taught us that when we was kids. They always broke matches. My oldest brother, Windy, used to in the spring, he'd break up several boxes and have them ready to go. Break them in two of an evening when he was sitting around the house.[18]

FIG. 2. *Fire-setter with firestick, Chase County, Kansas, March 1988.* Photo courtesy of James Hoy.

As opposition to burning grew, resulting in fewer landowners wanting their pastures burned, burning became a much harder job. Backfires had to be carefully set and fires more closely watched. Rather than simply toss down matches, fire-setters have used a number of devices that offer greater control. I myself have used a pitchfork, for instance, to scrape dead grass together in burning the small horse pasture on our place. People burning larger acreages prefer a garden rake to a fork, although they often replace the burnable wooden handle with a section of pipe. Welding torches have been put into use as fire-starters, as have kerosene weed burners and propane torches—even army surplus flame-throwers. In an adaptation of the Indian method cited earlier, some ranchers have used a kerosene-

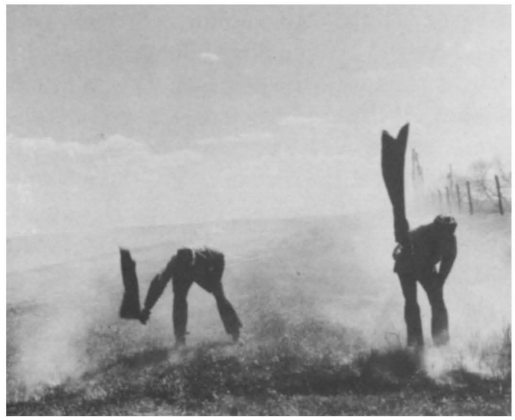

FIG. 3. *Putting out a backfire with wet gunny sacks, Chase County, Kansas, April 1987.* Photo courtesy of James Hoy.

soaked rag wired onto a horse-drawn lariat rope, while others have mechanized the process by fastening the rag to a heavy wire and dragging it with a pickup.[19]

The most unusual device used for fire starting, however, and one that seems to be used only in the Flint Hills, is variously called a firestick or a firepipe. It is, quite simply, a six-foot length of ordinary inch-and-a-half steel gas pipe with one end plugged and the other capped; a small hole is drilled in the plugged end and

FIG. 4. *Pasture-burning crew fire-guarding with firestick and sprayer, Chase County, Kansas, March 1988.* Photo courtesy of James Hoy.

the pipe is filled with gasoline. The person setting fires will start a clump of grass afire with a match, then stick the drip end of the pipe into the fire. As the gasoline burns, the stick is pulled along, setting a line of fire along the way. To stop the flame, the operator turns the pipe into the air and the flame soon burns away, or it can be snuffed out with a gloved hand. This device has all the appearance of a bomb, but I am told there is no known instance of an explosion, apparently because no oxygen can get into the pipe.

The firestick has come into widespread use in the Flint Hills only in the past dozen or so years, although it first appeared more than a quarter of a century ago. From what I have been able to ascertain, it is strictly a device of folk technology, although its derivation would seem to owe something to the commercially marketed drip torches, which operate through a wick rather than direct burning of liquid fuel, and which use a mixture of gasoline and diesel fuel rather than straight gasoline. Drip torches were originally designed for use by the forest service, but they are also used by personnel on the Konza Prairie.[20]

Another technological device that has eased the labor involved in burning—Slim Pinkston considers pasture burning the hardest job of any he performs—is the mechanical cattle sprayer. Backfiring often requires that a line of fire be extinguished, and a variety of methods have been used over the years in fighting fire: dragging a steer's carcass or a log over the fireline, using a "flapper" or a shovel as a beater, or most often, using a water-soaked cloth (gunny sack, canvas, old overalls) to beat out the fire. The sprayer, however, is a much more effective tool—provided the engine starts and the nozzle doesn't clog.

Many pasture-burning crews, in fact, still carry buckets of water and gunny sacks along with their mechanical sprayers, just in case. Experienced pasture burners, moreover, always carry matches. More than one person has been spared serious injury in a wind shift by setting a backfire and then stepping into the burned area. I have learned of only one fatality among modern pasture burners, and that was not caused by the fire itself. In 1982 during a burn at the Baker University Wetlands near Baldwin City, Kansas, biology professor Ivan Boyd was killed when the water truck accidentally backed over him.[21] Several men have been severely injured by fire, however. I remember seeing, as a youth, the terrible scars on Arthur Waits—scars resulting from his having been caught in a wild prairie fire near Cassoday. More recently I have been told of two men near Council Grove who were caught by a wind change. They survived, with serious burns, by lying down in a ditch and letting the fire burn over them. They did, however, lose their pickup, a not uncommon occurrence. Morris County, for example, lost a two-wheel-drive pickup that had gone down a hill to take on water at a pond, then was unable to climb the hill with its sloshing load.[22] Slim Pinkston also told of burners who had stuck their pickups in buffalo wallows or springy areas of a pasture then lost them when the wind changed direction.

A typical pasture burn is conducted in the following manner.[23] A desirable date is set for burning a particular pasture and neighbors are notified, so that should they want to burn their own land—or should they want to keep it from being burned—they can help. In either case, if it is not raining and if the wind is favorable, the crews gather at the agreed-upon time to set backfires, or fireguards. ("Guarding" is the term most often used by burners.) Many times at least half a dozen people are involved; one informant even told me that he thought there was a state law, unenforced, mandating that at least five persons had to be on hand before a fire could be set.[24]

A cattle sprayer will take the lead, laying down a bead of water to dampen the edge where the fire line is to be established. Then whoever is wielding the firestick will start a small strip of fire, followed closely by a second sprayer to stop the fire on the downwind side. Sometimes someone with a bucket and gunny sack will follow in case a small patch of fire escapes the

FIG. 5. *Larry Pinkston setting a backfire, Chase County, Kansas, April 1987.* Photo courtesy of James Hoy.

second sprayer. The firestick operator will then lay down several other narrow strips of fire, which will burn together more quickly than would a single line because of the convection caused by the heat of the multiple lines of fire.

After the necessary backfires have been carefully established, around not only the back of the pasture but also its sides and around buildings and windbreaks, a headfire will be set on the other side of the pasture and the two firelines will burn themselves out as they meet. In a large pasture or in several contiguous pastures, a fire that was set in the morning may not burn out until many hours later.

Some fires burn all night, causing motorists each year to stop in Emporia or Eureka or Cottonwood Falls to report to law enforcement officials what they think to be uncontrolled prairie fires. Little do they know that they are witnessing a folk practice of Flint Hills graziers dating back to the time of territorial Kansas, a beneficial practice that might have died out completely were it not for these graziers. Distinctly noticeable during the summer of 1988 was a general calm in the Flint Hills concerning the forest fires that burned in Yellowstone Park. Unlike the general public, residents here had a better understanding of the government's "let it burn" policy. In the Flint Hills they know the rejuvenating effect of fire.

NOTES

An earlier version of this paper was read at the 1987 Northern Great Plains History Conference.

1. Sharon Begley and Patricia King, "The Prairie's Last Stand," *Newsweek*, 3 June 1985, 76.

2. For an overview of agricultural practice in the Flint Hills see Tom Isern, "Farmers, Ranchers, and Stockmen of the Flint Hills," *Western Historical Quarterly* 16 (July 1985): 253-64, and W. M. Kollmorgen and D. S. Simonett, "Grazing Operations in the Flint Hills-Bluestem Pastures of Chase County, Kansas," *Annals of the Association of American Geographers* 55 (1965): 260-90.

3. Information in this paragraph is based on Stephen J. Pyne. *Fire in America: A Cultural History of Wildland and Rural Fire* (Princeton: Princeton University Press, 1982); on Thomas B. Bragg and Lloyd C. Hulbert, "Woody Plant Invasion of Unburned Kansas Bluestem Prairie," *Journal of Range Management* 29 (1976): 19-24; and on the following bulletins from the Kansas Cooperative Extension Service: "Fire as a Management Tool," #L-663 (March 1983); "Planning and Conducting Prescribed Burns," #L-664 (March 1983); "Prescribed Burning Safety," #L-565 Revised (January 1983); and "Bluestem Range Burning," #L-277 (August 1975). Concerning specifically the encroachment of trees, Ben Scharplaz reported to me (in an interview conducted 28 November 1984) that when he used to take the train from Brookville to Kansas City in the 1930s there were no trees in the Flint Hills south of Manhattan. Today pastures in that area contain large numbers of red cedar and elm. See Bragg and Hulbert, p. 19, and Conrad Taylor Moore, *Man and Fire in the Central North American Grassland 1535-1890: A Documentary Historical Geography*, Ph.D. diss., University of California, Los Angeles, 1972, pp. 68, 83, and 121.

4. Author's informal conversation with Sam Methvyn, Chase County rancher, June 1986.

5. Author's informal conversation with Wayne Rogler, Chase County rancher, April 1987.

6. Terry G. Jordan, *Trails to Texas: Southern Roots of Western Cattle Ranching* (Lincoln: University of Nebraska Press, 1981), pp. 37, 61, 85, 107. For a thorough overview of Native American burning and white resistance to and adaptation of the practice, see Pyne, *Fire in America*, pp. 71-99.

7. See Moore, *Man and Fire*, pp. 81-82.

8. Joseph W. Snell, "Prairie Fires: The Greatest Fear of Early Kansas Settlers," *Kanhistique* 11 (May 1985): 2-4.

9. Interviews by Tom Isern with Darold Marlow, 15 November 1984, and with Alvin E. "Pete" Maley, 31 October 1984, both on file in the Flint Hills Oral History Collection, Lyon County Historical Museum, Emporia, Kansas.

10. Letter to the author from Dale Rollins, Extension Wildlife Specialist at San Angelo, Texas. See also "Fire as a Management Tool." Articles on the beneficial effects of intentional burning in western Kansas, Oklahoma, and Texas, respectively, have appeared in the following articles in *The High Plains Journal*: "Good Pasture Needs Burning," 11 May 1987, pp. 1A-2A; "Successful Pasture Burn Takes Planning to Kill Cedars," 7 July 1986, p. 12A; and "Helicopter Used to Torch 10,000 Acres of Ranch," 13 May 1985, p. 1B. Kansas State University has conducted long-term experiments on the 8616-acre Konza Prairie, described in O. J. Reichman, *Konza Prairie: A Tallgrass Natural History* (Lawrence: University Press of Kansas, 1987), pp. 205-207.

11. Author's interview with Ohlenbusch, 15 November 1984.

12. Moore, *Man and Fire*, pp. 65-92 and passim; Pyne, *Fire in America*, pp. 85-86 and passim.

13. A transcript of the Moxley interview, conducted by Tom Jackson, 11 December 1972, is in the files of the Flint Hills Oral History Collection. According to the evidence gathered by Moore (*Man and Fire*, pp. 66-67, 75, 129), the Osage used burning extensively, the Kansa to a lesser extent. Both tribes were active in the area of the Flint Hills later occupied by the Moxley ranch.

14. Pioneers had begun to burn as a means of improving pasture in northwest Arkansas (an area also associated with the Osage) as early as 1819, shortly after settlement there began. See Moore, *Man and Fire*, p. 80. On early cattle grazing in the Flint Hills, see *Chase County Historical Sketches* vol. 1 (Cottonwood Falls, Kansas: Chase County Historical Society, 1940): 359.

15. From the copy of Elisha Randall Mardin's diary given to author by his great-granddaughter, Mrs. Dorothy Kroh of Shawnee Mission, Kansas.

16. Kling L. Anderson, "Grazing Management and Fire in the Flint Hills," *Transactions of the Kansas Academy of Science* 70 (1967): 173.

17. Interview by Glen Suell of the American Society of Range Management and Henry Rogler's son Wayne Rogler with Henry Rogler, 1964. Typescript in author's possession.

18. Author's interview with Dudley "Slim" Pinkston, 2 April 1987. The Pinkston brothers oversee 40,000 acres in four counties.

19. Pyne, *Fire in America*, p. 93, and author's interview with A. H. Hermstein, 28 August 1987, and with Al Will, 4 November 1987.

20. See 1987 issue of *Forestry Suppliers, Inc. Catalog*, p. 60, and Reichman, *Konza Prairie*, p. 206. I am currently investigating the origin and use of the firestick.

21. Telephone interview with Dr. Roger Boyd, Baker University, 5 May 1989.

22. Hermstein interview.

23. Based on my observation of a Pinkston burn, 2 April 1987.

24. Hermstein interview. I have found no evidence of the existence of this law; it is apparently part of pasture burning lore.